

Environmental Strategies for Substance Abuse Prevention:

Analysis of the Effectiveness of Policies To Reduce
Alcohol, Tobacco, and Illicit Drug Problems

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Environmental Prevention Strategies:

An Introduction and Overview

by

Deborah A. Fisher

For many years, prevention strategies have been an important part of comprehensive efforts to reduce the harmful use of substances and related problems. Among prevention strategies, those best known to the general population, policymakers, and practitioners are the ones that target individuals for intervention and are designed to influence their attitudes, knowledge, skills, and behavior. Less well known are environmentally directed prevention strategies that seek to reduce or eliminate substance abuse and related problems by changing the overall context within which substance use occurs.

Throughout the last several decades, public health efforts have incorporated an increasing number of environmental strategies, and a body of research has accumulated showing that these strategies can be effective in reducing problems associated with alcohol and tobacco. A variety of strategies targeting the context of illegal drug use have also been developed and seem promising; however, there is relatively less research on their effectiveness. This monograph synthesizes current information regarding the theory, research, and application of environmental approaches to substance abuse problems. An increased understanding of this class of prevention strategies will enable prevention professionals and policymakers to diversify the nature and enhance the quality of prevention efforts.

Individually Directed vs. Environmentally Directed Prevention

Prevention directed at individuals is based on the assumption that substance abuse arises because of problems or deficiencies within persons. According to this model, deficits in knowledge about the negative consequences of substance use, inadequate resistance skills, poor decision making ability, low academic achievement, and so forth raise the probability of a person's involvement with alcohol, tobacco, and illicit drugs. The goal of individually focused prevention, then, is to remediate these individual-level risk factors or enhance individual-level protective factors in order to reduce the likelihood of substance abuse. Much of the prevention to which youth are currently exposed falls into this category. Widely used school-based curricular programs, which seek to educate students about substance use and enhance life skills and resistance skills, are examples of individually directed prevention.

Prevention aimed at the environment is based on the community systems perspective that views a community as a set of persons engaged in shared social, cultural, political, and economic processes (Holder, in press). This perspective takes into account the fact that individuals do not become involved with substances solely on the basis of personal characteristics. Rather, they are influenced by a complex set of factors in the environment, such as the rules and regulations of the social institutions to which they belong, the norms of the communities in which they live, the mass media messages to which they are exposed, and the accessibility of alcohol, tobacco, and illicit drugs. Because substance abuse is viewed as a product of the overall system, effective prevention requires making appropriate modifications to the community at large (Holder, in press).

Advantages of Environmental Prevention Strategies

As a class, environmental strategies offer a promising complement to prevention strategies targeting individuals. Because they focus on changing the underlying contextual processes that contribute to substance use, they have the potential to generate larger effects than prevention aimed at individuals because they impact greater numbers of persons and may produce more sustainable results at lower costs.

Compared to individually focused prevention, which seeks to reduce individual risk by intervening and creating change one person at a time, strategies focused on the environment have the ability to reach entire populations and reduce collective risk (Holder, in press). While substance abusers (e.g., addicted drinkers, drug-dependent persons) are overrepresented in substance-related problems, the majority of problems are due to the substance use of light and moderate users (Edwards et al., 1994). Altering the community system may produce widespread small changes in

behavior among large populations (including, but not limited to, heavy and addicted users) that result in substantial net benefits to society in terms of reduced problems (Wagenaar & Farrell, 1988).

Prevention targeting the environment also offers the opportunity to produce more enduring reductions in risk by creating conditions that support the nonuse of illicit substances and responsible use of legal ones. Programs that target individuals for intervention without considering the environments in which those individuals live may find their effectiveness severely undercut by processes outside the individual that are inconsistent with program messages. For instance, programs that teach youth resistance skills may be undermined to the extent that young people are exposed to messages glamorizing alcohol use, can easily purchase alcohol, and perceive that there are no penalties associated with underage drinking. Substantial and sustained reductions in use are more likely to be achieved when environmental influences are consistent with and mutually reinforcing of the formal prevention messages directed at individuals.

To the extent that the processes influencing substance use are successfully altered, environmental approaches have the potential for long-term, as well as short-term, effectiveness. Changes in the Legal, economic, and social contingencies surrounding use may foster important shifts in attitudes that are less supportive of use. The synergistic effects of environmental barriers to use, coupled with widespread normative change, may result in the creation of a substantially changed system that offers fewer opportunities and inducements to use substances for current and future generations. Even if individually focused strategies are effective in creating lasting change in individuals, because they fail to change the fundamental processes supporting use, they must be repeated for each new generation.

In addition to considerable potential effectiveness, environmental approaches have the benefits of being comparatively easy to maintain and perhaps less costly than strategies directed at individuals. Once laws and policies are in place, relatively little effort or expense may be required for them to function. For instance, once a tax has been passed, no further action is required to raise the price of a bottle of wine or a pack of cigarettes. While there may be minimal costs associated with their implementation, legal and economic controls may require some level of monitoring and political action to ensure that they are not reversed at a later time, such as through repeal of a tax or a city ordinance. Other types of policies may require resources for their implementation (e.g., establishing or expanding a regulatory agency, paying for additional police time, etc.); however, such costs may be considerably lower than those associated with education, service; and therapeutic efforts applied to individuals. When enforcement or regulation is a part of the environmental control, actual costs of such operations may be reduced by supplemental media efforts that increase perceptions of surveillance and the likelihood of penalties. And there is evidence that while the potential effectiveness of any policy decays over time because of lower compliance or lowered regulation or enforcement, policies continue to have some effect, even without reinforcement (Holder, in press).

Types of Environmental Prevention Strategies

Systemwide changes are most often brought about through public policies-laws,, regulations, and formal rules-that seek to influence both the total amount of substances consumed and the patterns of use (i.e., how substances are consumed across time and across situations) (Wagenaar & Farrell, 1988). The greatest number of policy options have been developed for influencing alcohol use, and several typologies for classifying alcohol policies have been described (Gordis, 1996; Stewart, 1997; Wagenaar & Farrell, 1988). Table 1 provides a typology of environmental policies with specific examples for alcohol, tobacco, and illicit substances.

Table 1. Examples of Environmental Policies by Substance

	Alcohol	Tobacco	Illicit Drugs
Policies To Limit Access:			
Purchase laws	Minimum legal drinking age for purchasing and consuming alcohol	Youth access laws prohibiting retail sales of tobacco to minors	Laws prohibiting possession and use
Legal restrictions on use (location, time, etc.)	Open container laws prohibiting drinking in parks and at community events	Bans on smoking in public places, such as movie theaters and airplanes	_____
Price controls	Sales taxes; bans on drink discounts and other price specials(2 for the price of 1)	Excise taxes; bans on rebates after purchase	Using supply reduction efforts to drive up drug prices
Restrictions on retail sales or sellers (number, location, density, days and hours of sale)	Ordinances establishing minimum distance between outlets and schools and churches	Limits on the number of tobacco vendor licenses	Civil actions to eliminate properties where drugs are sold (e.g., drug house abatement); creation of physical barriers to sales (walls, gates, increased lighting)
Selling and/or serving controls	Liability of sellers and servers of alcoholic beverages	Tobacco retailer education regarding youth access laws and how to check Ids	_____
Controls on product content and packaging	Restrictions on bottle size and number of containers per case	Requirements for ingredient-labeling on cigarette packs	_____

	Alcohol	Tobacco	Illicit Drugs
Policies To Reduce Harmful Consequences of Use:			
Legal deterrence	Lower blood alcohol concentration for young drivers; administrative license revocation for driving under the influence	Fines assessed against retailers who sell tobacco to minors; media advocacy efforts to increase vendors' perceptions of risk of apprehension	Use (drugs)—Lose (driver's license) laws for youth; workplace drug testing
Controls on advertising and promotion	Bans on alcohol sponsorship of sporting and cultural events; health warning signs at point-of-sale and in on-premise outlets	Surgeon General's warning on cigarette packs; restrictions on distribution of free samples and coupons	Public service announcements regarding hazards associated with drug use
Policies To Reduce Harmful Consequences of Use:			
Measures that reduce consequences of excessive use	Padded furniture in bars; safe rides for intoxicated patrons	Designated nonsmoking areas to reduce nonsmokers' exposure to secondary smoke	_____
Substitution of less damaging products	Low-alcohol beer; non-breakable drinking glassware	Low-tar and self-extinguishing cigarettes	Methadone maintenance; distribution of bleach for disinfecting drug paraphernalia

Environmental policies may be seen as falling into three general categories. It should be noted that these categories are neither absolute nor discrete and that some strategies serving multiple policy functions can be classified in more than one category.

- (1) **Availability policies that establish barriers to limit physical, legal, and economic access to substances.** These policies may seek to prevent access completely among certain groups, such as minimum purchase age laws affecting minors, or they may serve to increase the cost, effort, and time required by the general population to obtain substances. Specific strategies in this category include: legal restrictions on who can purchase and where and when substances may be used, taxes and other price controls, restrictions on retail sellers, selling and/or serving control policies, and controls on product content and packaging.

Issues associated with creating barriers to access include (1) garnering necessary support among the general population and policymakers to establish and maintain them and (2) practical constraints surrounding their implementation. The implementation of access measures is relatively straightforward in the case of legal substances because they can be enacted readily by legislators and regulators. Once passed, a city ordinance prohibiting smoking in restaurants curtails the use of cigarettes, just as an increase in the price of beer reduces its economic accessibility. With legal substances that are widely used, like tobacco and alcohol, relatively more effort may need to be focused on raising awareness and building political will for controls on access. Such measures may face strong opposition on many fronts, including the industry and retailers concerned with the economic impact of the measures as well as segments of the general population who may feel that their right to use these substances is being infringed upon.

The case of illicit drugs presents a different scenario, in which widespread support for creating barriers to access often exists, however, applying restrictions is a difficult matter because the manufacture, distribution, and sale of illicit drugs are underground. This being the case, the creation of access restrictions has typically been undertaken by law enforcement agencies working to interdict drugs, disrupt supply networks, and arrest drug sellers. Controls on precursor chemicals and prescription pharmaceuticals have also been established through government regulations to make manufactured drugs less available. More recently, a variety of local community measures aside from traditional law enforcement efforts have been used to create an environment in which it is harder for sellers and buyers to transact business, thus creating an additional set of constraints on access.

- (2) **Policies that establish penalties for problematic use or other controls in order to influence individuals' decisions regarding substance use practices without restricting access.** Specific strategies in this category include legal deterrence measures and controls on advertising and promotion.

Deterrence measures are based on the assumption that knowledge both of the illegality of an act and the penalties that will be meted out for committing it will reduce the likelihood that people will engage in unwanted behavior. For deterrence measures to be most effective in preventing substance-related problems, sanctions need to be swift, certain, and meaningful. People must believe that if they violate the law, they will be caught and they will be subject, in a timely manner, to substantial negative consequences that will outweigh any gains that might accrue from their breaking the law.

General deterrence laws establish legal penalties to prevent the general public from engaging in any use of illicit substances and problematic use of legal ones. Laws prohibiting driving after drinking, tobacco sales to minors, and use and possession of illicit drugs are general deterrence measures. In addition to criminal laws, civil remedies, such as fines and asset forfeiture, are also used for general deterrence.

Specific deterrence laws establish controls to prevent offenders from repeating their offense (Hingson, 1996). In the area of drinking and driving, measures applied to individuals convicted of driving under the influence (DUI) include treatment or rehabilitation; jail sentences; probation; mandatory license suspension; actions against vehicles and tags, such as the installation of ignition interlocks; and lower blood alcohol concentration limits for DUI offenders. Efforts to reduce recidivism that combine specific deterrence measures have been found to increase their effectiveness. For example, an analysis by Wells-Parker and colleagues (1995) found that combining treatment with license action was more effective than either tactic alone.

Restrictions on advertising and promotion seek to affect decisions and norms about use by either limiting the pro-use messages to which individuals are exposed or providing information about the hazards associated with use (counteradvertising). Controls on pro-use messages include restrictions on television, radio, and print advertising; limitations on promotional activities such as sponsorship of sporting and cultural events and distribution of merchandise with brand logos; and efforts to reduce the pervasiveness of portrayals that glamorize or normalize the use of substances in popular forms of entertainment, such as movies and television programs. Counteradvertising measures include health warning labels and information campaigns designed to warn the public of the dangers inherent in the use of legal and illegal substances.

- (3) **Harm reduction policies that decrease the likelihood of negative consequences associated with use without necessarily changing use levels or patterns.** Although first developed to mitigate the adverse consequences associated with illicit drug use, interventions to reduce use-related consequences are being applied to alcohol and tobacco as well (Single, 1996). Specific strategies include measures that reduce the consequences of excessive use and the substitution of less intoxicating or less damaging substances.

Harm reduction measures are based on the notion that despite the best prevention efforts to reduce access to substances and promote responsible decisions about their use, some people will use them in ways that pose serious health consequences. Therefore, another method of reducing potential problems involves altering the circumstances surrounding harmful use. The application of this approach to illicit drugs includes providing methadone to individuals trying to overcome their addiction to heroin and distributing bleach and condoms to injectable drug users to reduce the spread of the virus that causes acquired immunodeficiency syndrome. In the illicit drug area, harm reduction strategies have been used not only as the first line of defense against negative health consequences of drug use, but also as a way to connect people in need with treatment and other helping agencies. Harm reduction strategies have also been used with legal substances to mitigate the problems that are involved with their use, such as low tar cigarettes to decrease the negative physiological consequences of smoking and self-extinguishing cigarettes to reduce the likelihood of house fires.

This broad array of policies allows society to enact measures that influence how, when, where, and how many people use substances and the probability of negative outcomes. In addition to exerting controls on levels and patterns of use, environmental strategies can also help reduce problems by creating normative shifts in how people think about substance use. Policies are one mechanism through which society expresses what it values, what it tolerates, and what it disapproves. Once they are enacted, policies can help redefine what is considered appropriate use. For example, a school with a strictly enforced substance abuse policy that prohibits use on school grounds and at school events by faculty, staff, and students; prohibits students from wearing clothes with drug-related messages; bans cigarette and alcohol advertising from school publications (e.g., yearbooks, student newspaper, etc.); and mandates substance abuse prevention as part of the curriculum sends a clear message that substance use is not approved. Over time, the existence of such a policy may bring about a shift in students' attitudes regarding the appropriateness of alcohol, tobacco, and illicit drug use.

While policy changes can promote shifts in norms, there are also occasions when normative changes serve as the impetus to new policies. Changes in attitudes about the appropriateness of driving after drinking and smoking in public places have fostered stricter enforcement of DUI laws and the enactment of clean indoor air legislation. In many cases, rather than a simple two-step change process, there is substantial overlap between attitude change and shifts in policies, with the two occurring in a more continuous and mutually reinforcing way. A change in norms among a small but visible and energized segment of the population may exert enough influence to get an initial policy or law passed. Over time, the attitudes of a greater number of individuals may be changed in a manner consistent with the policy. With more widespread normative change, additional and stronger policy or legislative changes may be established. The cycle continues until a balance between policies and societal norms is achieved.

Countering the Disadvantages of Environmental Prevention Strategies

Despite their advantages, environmental strategies also have some drawbacks. First, policies may have inherent monetary costs (e.g., reduced revenues for manufacturers and retailers, costs of enforcement, higher prices for consumers) that make them unpopular or controversial among segments of the population. There may often be intangible costs associated with policies in terms of reductions in personal freedom or the freedom to do business, or in criminalizing behavior that may be common in the general population (Stewart, 1997). The various costs of policies may engender strong resistance and make them difficult to implement. Political will and public support must be cultivated. Efforts to garner buy-in and support may require extensive community mobilization, media advocacy, and collaboration with policymakers.

Another disadvantage of environmental strategies is that they often do not provide the level of immediate public satisfaction and personal reward that educational or service strategies provide (Holder, 1997). In many ways, their implementation and connection to outcomes is less visible and tangible than individually focused strategies. While the efforts of a teacher to present a substance abuse prevention course may be readily apparent, the impact of a tax increase may not be as immediately evident even though it is likely to have a more powerful, long-term effect. Media advocacy and other community strategies can serve an important function by highlighting and making concrete the prevention effects of intangible policies. A march to the state house to celebrate the number of lives and dollars saved as a result of indoor air ordinances that is reported on local television can help raise awareness about the important health benefits and costs savings attributable to a policy that may otherwise go unnoticed. Media advocacy and community efforts can likewise provide rewards to those charged with enforcing policies. The job of police officers conducting sobriety checkpoints can be made more satisfying if community residents bring the officers dinner or donate gift certificates to be distributed to unimpaired drivers.

About This Monograph

Much of the evidence regarding the effectiveness of environmental strategies comes from research on alcohol and tobacco policies. Since these substances are legal, a wide array of public policies and environmental controls may be implemented to alter their levels of consumption and patterns of use among the general population. Alcohol and tobacco are subject to regulation by various levels of government, which may limit their manufacture, their distribution, and the conditions of their sale. They are also subject to taxes, which may be raised to increase their price. The advertising and promotion of these products may be restricted. Laws and ordinances can prescribe when alcohol and tobacco can be used, by whom, and in what locations.

The largest number of environmental prevention strategies have been developed and tested for alcohol. Researchers and policy analysts have published numerous documents indicating that alcohol control policies can have effects more powerful than treatment and prevention strategies oriented toward individuals (e.g., Bruun, Edwards, & Lumio, 1975; Makela, Room, Single, Sulkunen, & Walsh, 1981; Moore & Gerstein, 1981; Single, Morgan, & DeLint, 1981. More recently, Edwards and colleagues (1994) and Holder and Edwards (1995) have distilled current knowledge regarding the health benefits of alcohol policies. The chapter in this monograph written by Norman Giesbrecht provides a comprehensive review of the research on alcohol control policies. The chapter begins with a description of the different types of alcohol policies and discusses special issues related to alcohol prevention with youth. The bulk of the chapter presents an extensive review of the research findings on the benefits of these policies based on studies of the general population and, where available, youth specifically. The chapter concludes with a discussion of ways to enhance the impact of environmental strategies.

With respect to tobacco, environmental prevention strategies have been devised to reduce initiation and smoking levels among young people. Evaluations indicate that a number of these environmentally focused strategies are associated with reductions in tobacco use (Chaloupka & Grossman, 1996; Chaloupka & Wechsler, 1995; DiFranza, Carlson, & Caisse, 1992; Evans & Farrelly, 1997; Evans,

Farrelly, & Montgomery, 1996; Jason, Ji, Anes, & Birkhead, 1991; Wasserman, Manning, Newhouse, & Winkler, 1991). Frank Chaloupka, Michael Grossman, and David Levy contributed the chapter in this volume regarding tobacco policies for reducing youth smoking. These authors review four major environmental strategies applied to tobacco: restrictions on minors' retail access to tobacco products, limits on smoking in public places, higher prices for cigarettes, and limits on tobacco advertising. Although the majority of these strategies focus on the general population, they may have more powerful effects among youth.

As mentioned previously, the application of environmental strategies to reduce the use of illicit drugs and related problems is a more complicated matter. Because of the illegal nature of these substances, their manufacture, distribution, sale, and use are covert processes that are not as readily identifiable or as easy to influence. With their markets underground, direct controls on sellers, prices, and access are more difficult to effect. Despite these inherent obstacles, a number of strategies for influencing the context of illicit drug use and sales have been devised and implemented, although they are largely untested. In the final chapter of this monograph, Robert Davis provides the historical context and theoretical background to the use of environmental strategies to reduce crime and its extension to illicit drugs. The chapter covers five types of environmental strategies applied to drugs. In addition to the efforts of governments and law enforcement agencies to reduce the supply of drugs and eliminate drug dealers, other measures used by local communities to prevent drug sellers and purchasers from coming together and transacting business are discussed. Research evidence is also discussed pertaining to the common concern that local environmental approaches to controlling illicit drugs do not reduce, but simply displace, drug problems from one location to another. Directions for further applications of environmental strategies to illicit drug problems and future research are also discussed.

In general, environmental strategies offer a promising approach to the prevention of substance abuse problems. Efforts to measure their effectiveness and disseminate research findings help ensure that the contributions of these important resources for prevention are fully tapped. It is hoped that the thorough and thoughtful discussions by the authors of this monograph will help provide useful guidance to those working to reduce problems of substance abuse in States and communities.

References

- Bruun, K., Edwards, G., & Lumio, M. (1975). *Alcohol control policies in public health perspective*. Vol. 25. Helsinki, Finland: Finnish Foundation for Alcohol Studies.
- Chaloupka, F. J., & Grossman, M. (1996). *Price, tobacco control policies, and youth smoking*. Unpublished Working Paper No. 5740, National Bureau of Economic Research, Cambridge, MA.
- Chaloupka, F. J., & Wechsler, H. (1995). *Price, tobacco control policies, and smoking among young adults*. Unpublished Working Paper No. 5012, National Bureau of Economic Research, Cambridge, MA.
- DiFranza, J., Carlson, R., & Caisse, R., Jr. (1992). Reducing youth access to tobacco. *Tobacco Control*, 1, 58.
- Edwards, G., Anderson, P., Babor, T., Casswell, S., Ferrence, R., Giesbrecht, N., Godfrey, C., Holder, H., Lemmens, P., Makela, K., Midanik, L., Norstrom, T., Osterberg, E., Romelsjo, A., Room, R., Simpura, J., & Skog, O. (1994). *Alcohol policy and the public good*. New York: Oxford University Press.
- Evans, W. N., & Farrelly, M. C. (1997). *The compensating behavior of smokers: Taxes, tar, and nicotine*. Unpublished Working Paper, University of Maryland, Department of Economics, College Park, MD.
- Evans, W. N., Farrelly, M. C., & Montgomery, E. (1996). *Do workplace smoking bans reduce smoking ?* Unpublished Working Paper No. 5567, National Bureau of Economic Research, Cambridge, MA.
- Gordis, E. (1996). Alcohol research and social policy: An overview. *Alcohol Health and Research World*, 20, 208-212.
- Hingson, R. (1996). Prevention of drinking and driving. *Alcohol Health and Research World*, 20, 219-226.
- Holder, H. D. (in press). Prevention aimed at the environment. In B. S. McCrady, & E. E. Epstein (Eds.), *Addictions: A comprehensive guidebook for practitioners*. Oxford: Oxford University Press.
- Holder, H. D., & Edwards, G. (1995). *Alcohol and public policy: Evidence and issues*. Oxford: Oxford University Press.
- Jason, L. A., Ji, P. Y., Anes, M. D., & Birkhead, S. H., (1991). Active enforcement of cigarette control laws in the prevention of cigarette sales to minors. *Journal of the American Medical Association*, 266, 3159-3161.
- Makela, K., Room, R., Single, E., Sulkunen, P., & Walsh, B. (1981). *Alcohol, society, and the state: A comparative study of alcohol control*. Toronto, ON: Addiction Research Foundation.
- Moore, H., & Gerstein, D. (1981). *Alcohol and public policy: Beyond the shadow of prohibition*. Washington, DC: National Academy Press.
- Single, E., Morgan, P., & deLint, J. (1981). *Alcohol, society, and the state: The social history of control policy in seven countries*. Toronto, ON: Addiction Research Foundation.
- Single, E. (1996). Harm reduction as an alcohol-prevention strategy. *Alcohol Health and Research World*, 20, 239-243.
- Stewart, K. G. (1997). Environmentally oriented alcohol prevention policies for young adults. In *Secretary's Youth Substance Abuse Prevention Initiative: Resource papers. Pre-publication documents* (pp. 107-158). Rockville, MD: Substance Abuse and Mental Health Services Administration.

Wagenaar, A. C., & Farrell, S. (1988). Alcohol beverage control policies: Their role in preventing alcohol impaired driving. In Office of the Surgeon General, *Surgeon General's Workshop on Drunk Driving: Background papers* (pp. 1-14). Rockville, MD: Office of the Surgeon General.

Wasserman, J., Manning, W. G., Newhouse, J. P., & Winkler, J. D. (1991). The effects of excise taxes and regulations on cigarette smoking. *Journal of Health Economics*, 10, 43-64.

Wells-Parker, E., Bangert-Drowns, R., McMillen, R., & Williams, M. (1995). Final results from a meta-analysis of remedial interventions with DUI offenders. *Addiction*, 90 (7), 907-926.